

# Validation of Fiber Optic Temperature Sensor Arrays for Thermal Protection System Materials

Completed Technology Project (2015 - 2018)



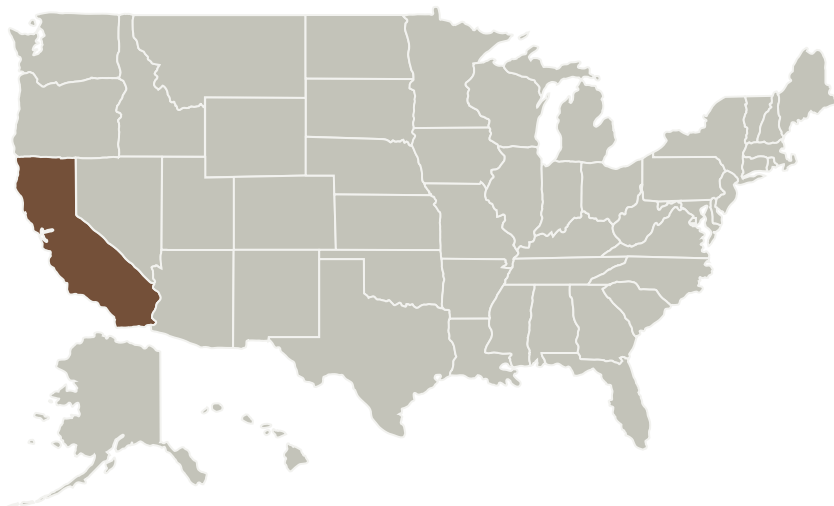
## Project Introduction

Advanced fiber optic temperature sensing technology into thermal protection system development and flight instrumentation to improve our understanding of how heatshield materials perform and thereby our ability to do human and robotic spaceflight.

## Anticipated Benefits

This project hopes to improve our understanding of how heatshield materials perform and thereby our ability to do human and robotic spaceflight.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Intelligent Fiber Optic Systems Corporation	Lead Organization	Industry	Santa Clara, California

### Primary U.S. Work Locations

California



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## Project Transitions



**November 2015:** Project Start



**January 2018:** Closed out

**Closeout Summary:** Completed fabrication of sensorized arc jet test models (both PICA and BPA) and arc jet tested them (18 total models). Determined that Fiber Optic Bragg (FBG) sensors performed well up to 1000-1200C, fiber degradation occurs at higher temperatures. Going to Sapphire fibers would increase temperature capability. Thermocouples provide accurate data up to 1500C. Advanced TRL for FBG sensors to 6.

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Intelligent Fiber Optic Systems Corporation

### Responsible Program:

Game Changing Development

## Project Management

### Program Director:

Mary J Werkheiser

### Program Manager:

Gary F Meyering

### Principal Investigator:

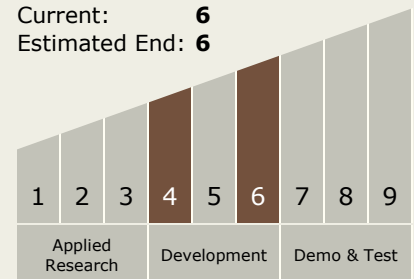
Jay D Feldman

## Technology Maturity (TRL)

Start: 4

Current: 6

Estimated End: 6



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## Target Destination

Foundational Knowledge